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ABSTRACT

This study was designed to examine the preceptions of allied health careers by elementary and secondary school students. A 6-part, 45-question survey was designed and administered to randomly selected classes of third, sixth, ninth, and twelfth grade students in the Shawnee Mission (Kansas) school district. Three hundred and five surveys were distributed with 292 usable responses received. The male-to-female ratio was 131:161. The survey was designed to elicit students' knowledge/perceptions of 10 allied-health careers, and their perceptions of people versus machine orientation, work site, and work locale. Also elicited were data related to the students' knowledge of future career choice, college plans, and interest in a medical/allied health career. Data were analyzed by sex and grade level for each of the career choices. The hypothesis that there exists a lack of knowledge or basic understanding of the allied health specialties studied was supported. Less than half (46.53 percent) of all answers were correct overall, and lack of knowledge did not appear to be sex linked. Certain careers were more closely correlated with correct answers than were others (e.g., speech pathology was more often correctly identified than was radiology technology). (Author/KC)

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# ELEMENTARY AND SECONDARY STUDENTS PERCEPTIONS OF ALLIED HEALTH CAREERS

Presented at the American Association
for Respiratory Therapy Summer Forum
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# ALLIED-HEALTH CAREERS AWARENESS STUDY

## ABSTRACT

The question, "Where do our students come from?" is often asked. In an attempt to respond to this question, a study was designed to examine the perceptions of allied-health careers in elementary and secondary school children.

A six part, forty-five question survey was designed and administered to randomly selected classes of third, sixth, ninth and twelfth grade students in the Shawnee Mission (Kansas) School District.

The survey was designed to elicit student's knowledge/perceptions of ten allied-health careers, their perceptions of people vs machine orientation, work site, and work locale. Also elicited were data related to the student's knowledge of future career choice, college plans and interest in a medical/allied-health career.

Three hundred and five (305) surveys were distributed with two hundred and ninety-two (292) usable responses received (95.7%). The male to female ratio was 131/161. The responses by grade were third-60; sixth-90; ninth-71; and twelfth-71.

The hypothesis that there exists a lack of knowledge or basic understanding of the allied-health specialties studied was supported. Less than half (46.53%) of all answers were correct overall, with little, if any, discrimination by sex. Certain careers were more

closely correlated with correct answers than were others, (i.e., Speech Pathology was more often correctly identified than was Radiology Technology). Data was analyzed by sex and grade level for each of the career choices.

## INTRODUCTION

Given educational advancement, career choices narrow and become focused towards those careers to which the students have been exposed. The purpose of this study is to determine (1) knowledge of allied-health fields and (2) the change in degree of knowledge at various grade levels.

This investigation determines to what extent the students have awareness of career options within the medical fields. Many students who hear of or come into contact with allied health specialists, do not know of or understand the specific duties of such professionals. We hypothesize that this questionaire will show a lack of knowledge or basic understanding of these health specialties among the students. This is an indicator of a need for more awareness of health oriented career options. This study is also intended to show that as grade level increases, so will knowledge of various allied-health fields.

The behavioral objectives of this project are several-fold:

1. The students tested will indicate allied-health job titles with which they are familiar.
2. The students tested will indentify the "people" vs "machine" relatedness of each occupation.
3. The students tested will indicate the primary work site of each occupation.
4. The students tested will indicate the predominate work station of each occupation.
5. The students tested will indicate whether or not he/she has made educational/career plans for the future.

To the best of our knowledge, there have been no other studies performed and published in this area.

Population and Sample Characteristics -

The population from which our research sample was chosen was the Shawnee Mission (Kansas) School District (SMSD).

Geographically, the district is a suburb of Kansas City lying westward and contiguous to the cities of Kansas City, Kansas and Kansas City, Missouri.

The Shawnee Mission School District was chosen for two main reasons.

1. The district represents a homogenous socio-economic population.

and

2. The district is a highly rated, progressive school system with a commitment to health and career education.

Another motivating factor which aided in our decision to use the Shawnee Mission District as out test population was our feeling that it would represent "a best case" population and would therefore provide the highest percentage of correct answers attainable in the Kansas City SMSA.

The SMSD consists of:

| | | |
|---|---|---|
| Student Population | 30,500 | Student/Teacher |
| Schools | # | |
| Elementary Schools (K-6) | 43 | 22:1 |
| Jr. High Schools (7-9) | 10 | |
| Sr. High Schools (10-12) | 5 | 23.1 |
| Alternative Education Center | 1 | |
| Average Teacher Education | Masters + 15 hours | |
| Average Teacher Experience | 10 years | |

Table 1 - Characteristics of SMSD

The average Family income in the district is $28,000-30,000/year with 27,5% of the parents having a college degree.

The racial characteristics of the SMSD is dominantly white. (See Table 2)

| | | |
|---|---|---|
| Medium Income | | $28-30,000/yr |
| Parents with College degrees | | 27.5% |
| Race | White | 90% |
| | Black | 1.5% |
| | Oriental | 2% |
| | Hispanic | 3% |
| | Other | 3.5% |

Table 2 - Socio-economic Characteristics

The following factors should also be noted as relevant to our choice of the SMSD as a study population.

- On the average the students score in the 77th percentile on nationally standardized tests.
- 93% of all students complete high school (compared with 73% nationally).
- 80% of all high school graduates go on to college (compared to 50% nationally).
- The district's biology program was selected as Best-In-The-Nation.
- Career Development Centers were selected by U.S. Department of Education as one of seven model programs in the U.S.
- In 1983 the SMSD had 53 National Merit Semi-finalists with 63 more receiving commendations.

- Since 1968 has produced five (5) Rhodes Scholars and six (6) Presidential Scholars.
- For each of the past fourteen (14) years has been represented by one or more students at the International Science and Engineering Fair.

The district thus is representative of a highly motivated achievement oriented, predominantly white upper middle class population.

Materials and Methods -

In order to test the hypothesis, a six section questionaire was developed consisting of forty-five questions designed to elicit information on the depth of knowledge of ten allied-health professions. Refer to Table 3.

| | |
|---|---|
| Respiratory Therapist | - RT |
| Medical Technologist | - MT |
| Biometry | - BIO |
| Speech Pathology | - SP |
| Physical Therapist | - PT |
| Radiology Technician | - RAD |
| Anesthetist | - ANES |
| Dietician | - DIET |
| Medical Record Technologist | - MRT |
| Emergency Medical Technology | - EMT |

Table 3 - Professions Examined

Section I consisted of two questions designed to elicit demographic data (sex and grade level of the respondant). The grade

levels tested were third, sixth, ninth and twelfth. Section II through V each consisted of ten questions.

Section II asked for a response to the following question in relation to each of the careers: "Have you ever heard of the following job titles?" The student indicated either yes or no. Section III, again testing for each of the careers, asked for a response to the following question: "Do the people in the following jobs work primarily with people, with machines, or, with both?" The student responded by choosing answers indicating people, machines or both. Section IV asked the student the following: "Do most people in the following jobs work within a hospital, outside of a hospital, or, can they work both within and outside of the hospital setting?" The answer choices under the ten careers were within hospital, outside hospital, or both.

In Section V of the survey, the following was asked of each career: "Do people in the following jobs work mostly in a laboratory, patient care area, or, can they work in both areas?" The student responded by choosing one of the following answers: laboratory, patient care area, or both. The final part, Section VI, asked the students about their future educational plans. The three questions asked of the students were:

1) "Do you know what you want to do or be when you are out of school?"
2) "Do you plan to go to college?"
3) "Would you consider a career in the medical/allied-health field?"

The student responded with either a yes or no answer.

The survey was administered to third, sixth, ninth and twelfth grades, randomly selected from the Shawnee Mission School District, Johnson County, Kansas. Table 4 dipicts distribution and number of responses at each grade level.

| | | Sex | | |
|---|---|---|---|---|
| | | Male | Female | Total |
| G | 3 | 29 | 31 | 60 |
| R | 6 | 47 | 43 | 90 |
| A | 9 | 26 | 45 | 71 |
| D | 12 | 29 | 42 | 71 |
| E | | | | |
| Total | | 131 | 161 | 292* |

*Does not include 13 unusable responses primarily from 9th and 12th grades.

Table 4 - Response distribution, by sex and grade.

The survey instrument was non-identifiable except for grade and sex. All groups completed the same survey instrument except for third graders, whose survey instrument differed in the wording of questions to make the survey self administrable. Answers to the survey questions were recorded on a standard computer bubble score sheet. (See Exhibit #1)

Independent variables were the student's grade, sex, socio-economic level, and school district. Dependent variables were the student's knowledge of health field career options and future educational plans.

There were no control groups. The survey was, however, administered to various professionals in the respective fields to help validate the test. Their responses formed the correct answer pool. Scoring of the test was done via computer and simple statistics were done on all obtained data.

Results -

Results are detailed graphically in Figure 1-8. Table 5 shows a summation of mean percentages of correct responses by profession, sex and grade level.

| | SEX | | GRADE | | | | | |
|---|---|---|---|---|---|---|---|---|
| Profession | Female | Male | 3 | 6 | 9 | 12 | $\bar{X}$ | SD |
| RT | 40.2 | 45.8 | 34.8 | 42.4 | 46.3 | 48.6 | 43.03 | 5.24 |
| PT | 51.6 | 50.2 | 45.9 | 63.8 | 49.3 | 56.1 | 53.78 | 6.85 |
| MT | 43.3 | 44.5 | 38.0 | 44.6 | 40.9 | 52.1 | 43.90 | 5.28 |
| RAD | 30.1 | 34.4 | 22.6 | 22.4 | 28.4 | 46.2 | 29.90 | 9.71 |
| BIO | 30.9 | 33.9 | 37.8 | 39.4 | 32.3 | 38.0 | 36.88 | 2.71 |
| MRT | 34.3 | 31.6 | 33.9 | 35.3 | 31.4 | 31.3 | 32.98 | 1.70 |
| SP | 61.9 | 64.6 | 59.2 | 62.7 | 68.9 | 75.3 | 66.53 | 6.14 |
| ANES | 49.3 | 45.3 | 30.3 | 31.4 | 56.2 | 70.3 | 47.05 | 16.95 |
| EMT | 47.5 | 52.1 | 51.8 | 46.0 | 47.0 | 54.5 | 49.83 | 3.48 |
| DIET | 67.9 | 57.9 | 43.0 | 61.6 | 68.5 | 72.3 | 61.35 | 11.27 |
| $\bar{X}$ | 45.7 | 46.0 | 39.7 | 45.0 | 46.9 | 54.5 | 46.53 | 11.31 / 5.31 |
| SD | 11.98 | 10.17 | 10.10 | 13.31 | 13.69 | 13.86 | | |

Table 5 - Mean Correct responses by Profession, by Grade and Sex

Within and between group grand means and standard deviations were also calculated and recorded in this table. It is of interest to note that while the within group and between group grand means are equal their standard deviations vary significantly. The within group grand mean was 46.53%, S.D. ± 5.31; the across group grand mean was also 46.53% but the S.D. was ± 11.21. This indicated that the relative ranked positions of the professions are more consistent than the relative responses by sex or grade between the professions.

Table 6 indicates the ranked mean correct responses by profession and the respective standard deviations.

| | Profession | $\bar{X}$ | SD |
|---|---|---|---|
| 1. | Speech Pathology | 66.53 | 6.14 |
| 2. | Dietetics | 61.35 | 11.27 |
| 3. | Physical Therapy | 53.78 | 6.85 |
| 4. | Emergency Medical Tech | 49.83 | 3.48 |
| 5. | Anesthetist | 47.05 | 16.95 |
| 6. | Medical Technology | 43.90 | 5.28 |
| 7. | Respiratory Therapy | 43.03 | 5.24 |
| 8. | Biometry | 36.88 | 2.71 |
| 9. | Medical Record Technology | 32.98 | 1.70 |
| 10. | Radiology Technology | 29.50 | 9.71 |

Table 6 - Ranked Mean Correct Responses by Profession

A 4x4 correlation matrix was developed from the data in Table 5 (see Table 7a). The correlations were for the most part very high ranging from 0.946 (p 0.001) for the 9th by 12th grades to 0.476 (p = 0.1) for the 3rd by 12th grades. This again substantiates our initial hypothesis.

GRADE

| GRADE | 3 | 6 | 9 | 12 |
|---|---|---|---|---|
| 3 | | r=0.835 p= <0.01 | r=o.648 p= <0.05 | r=0.476 p=> 0.10 |
| 6 | r=0.835 p= <0.01 | | r=0.849 p= <0.001 | r=0.542 p=<0.10 |
| 9 | r=0.644 p= <0.01 | r=0.849 p=<0.001 | | r=0.946 p= < 0.001 |
| 12 | r=0.476 p=>0.10 | r=0.547 p=>0.10 | r=0.946 p= <0.001 | |

Table 7a - Grade Level Correlation Matrix
(Pearson's r, df = 9)

Additionally, a 2x2 matrix was constructed to examine sex correlations (Table 7b). Again a high degree of correlation was noted (r=0.928, p= 0.001).

| | MALE | FEMALE |
|---|---|---|
| MALE | | r=0.928 p= <0.001 |
| FEMALE | r=0.928 p= <0.001 | |

Table 7b - Sex Correlation Matrix
(Pearson's r, df=9)

Discussion -

The overall correct responses to this survey was 46.53%. This in and of itself, proves our hypothesis that there is a lack of basic understanding of allied-health career options.

Overall score, or percent of correct responses, did rise as grade level increased; which correlated education level to knowledge of allied-health fields. The increase in knowledge, however, was not dramatic. This is shown in Table 5 with a mean of 39.7% correct third grade responses, rising to only a mean of 54.5% correct twelfth grade responses. There was negligable difference (0.3%) in mean percent of correct responses between males and females. Thus, sex was not a factor in overall correct responses.

Although sex did not appear to be a significant factor in the overall analysis, two professions showed a slight sex bias (defined as a 5% + difference in correct responses) these were Respiratory Therapy which showed a male bias (5.6%) and Dietetics which showed a female bias (10.0%). The other eight professions did not meet the criteria established to determine sex orientation.

In examining the data we found that although overall there was an increasing knowledge of the professions with increasing grade level, this increase was not consistent within the professions. Not only was the magnitude of increase variable with grade but some professions showed decreased understanding in some grades as compared to preceding grade levels. Stepwise positive changes were evident in Dietetics, Radiologic Technology and Respiratory Therapy. The other professions showed mixed responses. Figure 1-4 illustrates and compares the sex and grade responses by profession. Also shown

graphically are the overall responses by sex and grade, (Figure 5) and the population means by profession. (Figure 6)

Figure 7 shows the results of data analyzed by question area. Section II concerns those questions concerned with identification of the profession. As can be seen this section had the highest correct response of the four sections analyzed. (59.27% ± 15.37) Section III delt with the questions regarding people or machine orientation. The median percent of correct responses was 48.52% ± 18.80, 10.75% lower than for Section II with 12th grade students performing best. Section IV, which had the lowest percentage of correct responses, delt with work site. The median score on this section was 34.07% ± 14.48. Section V, which investigated work setting had a median percentage correct of 41.68% ± 15.73.

The only significant difference between sex's was seen in Section II with males (61.63% ± 17.29) outscoring females (56.95% ±15.36).

Although 12th graders consistantly outscored the other grades, it is interesting to note that 9th graders failed to score equal to or higher than 6th graders in two of the four sections (Section IV and V) and only marginally outscored them in Section III.

Section VI of the survey elicited data regarding career plans, college expectations, and interest in medical/allied-health careers. While no significant variation in responses was noted based upon sex, females indicated slightly more positive responses to all

three areas than did males.

Figure 8 illustrates the response patterns for questions 43-45. Several interesting patterns emerge from this display.

In question 43 a decreasing certainty regarding career choice with increasing grade level is evident; from 71.5% ± 7.5 for 3rd graders to 58% ± 6.0 for the 12th grade.

It is hypothesized that this decrease stems from several factors:

1. A more realistic understanding of what various career choices entail in terms of training, skills and function, leading to a realization that career choices must be examined in detail.
2. An increasing understanding of personal skills and interest over the course of time tends at first to narrow career choices and then leads to a period of uncertainty regarding ones future activity.

The data from question 44 indicates a high degree of interest in college education (overall mean = 91.75% ± 2.28). This data closely parallels the SMSD data of 80% college attendance by it's graduates and fits the model of a highly motivated upwardly mobile socio-economic group such as the population of the SMSD. It is of interest to note that the 6th grade group has the highest expectation of college attendance (95.5% ± 2.5 while the 12th grade group had the lowest expectation (89.5% ± 3.5). This is attributed to a more realistic view of ones potentials by the 12th grade group. The

magnitude of male to female differences was negligible (1.0%) for this question.

Question 45, dealing with careers in the medical/allied health field, envolved the smaller number of positive responses in this section. Overall only 39.5% ± 7.0 replied that they would consider careers in these areas. Again the variances by sex was small (2.5%). However, the replys by grade produced data that was somewhat puzzling. The 6th and 9th grade groups markedly out scored the 3rd and 12th grade groups in positive responses. Again, we feel that realistic expectations, current career programming and increased understanding of skills, training and function are reflected in the 12th grade scores. This would appear to be substantiated upon examination of the stepwise decrease in positive response noted across the 6th, 9th and 12th grades. (46.5% ± 7.5, 44.5% ± 2.5, and 38.5% ± 4.5) The 3rd grade response (28.5% ± 0.5) is perhaps the most intriging, in light of the gap between their score and that of the 6th grade group. We hypothesize that this gap reflects a lack of exposure to the health fields listed. In addition it may well be that children in this grade level become strongly oriented towards the careers in which they have strong role models (i.e.)firefighters, police officers, teachers, astronauts, etc.

Conclusions -

The following conclusions may be drawn from the data collected in this study.

- Even in students of highly rated school systems there exists a substantial lack of knowledge related to allied health careers.
- This lack of knowledge is not sex-linked, rather it remains fairly constant across the professions and sexes.
- The knowledge level generally increases by grade level, however, certain professions show decreases in understanding over some grades.

Considerations for Further Research -

The following suggestions on further research in this area are offered:

1. It would be helpful to readminister this survey to:
   a. inner city populations
   b. geographically distributed populations
   c. private schools
2. The study would be of more value if:
   a. repeated as a longitudinal study for five or more years.
   b. interventions were designed and tested in order to study their value in changing student perceptions and knowledge of allied-health careers.

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